

Research & Policy Brief Series

Conservation and Land Use Planning: Linking Municipal Capacity and Biodiversity Outcomes

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What is the Issue?

From zoning to wetland protection to decisions about how to allocate land for open space or development, municipal governments make decisions that can significantly impact habitat and natural areas. The clear role of local decision makers in conserving biodiversity has led to calls for greater incorporation of ecology and conservation biology principles in local land use planning¹. To educate and support decision makers in the 260 municipal governments of the biodiverse and populous Hudson River Estuary watershed, the New York State Department of Environmental Conservation's (NYSDEC) Hudson River Estuary Program and Cornell University established the Conservation and Land Use Program in 2001. The extension programⁱⁱ provides planning tools, training, and technical and financial assistance to municipal officials in the watershed.

It is important to understand how well this type of extension programming can influence municipal land use practices to achieve meaningful conservation outcomes. Using the Conservation and Land Use Program as its focus, a recent studyⁱⁱⁱ funded by NYSDEC's Hudson River Estuary Program^{iv} examined how conservation of habitat and natural areas is incorporated into land use planning by municipal officials who have participated in the program.

A program participant says:

"Our newly designated conservation board has become much more widely utilized by our planning board as a 'planning partner' on site plans that have or might have any significant conservation conditions. Part of the reason [for this success] is that some of my colleagues and I have taken the time to attend trainings like these and the gained expertise is now considered an asset by the town."

Participants in the survey represented a wide range of municipal positions and boards, including conservation advisory councils, open space committees, planning boards, and town/village boards. They tended to be highly educated and have the time and interest to pursue knowledge and technical skills to address local conservation and land use issues.

Outcomes of Program Participation

As a result of participating in the Conservation and Land Use Program, 90% of the survey respondents reported that they better understood the principles of conserving biodiversity and factors contributing to its loss. Eighty-eight percent better understood why biodiversity is important. Most participants said they knew where to go for information on planning for biodiversity (92%); they intended to use the information (91%); and they were better able to inform and influence land use decisions (80%) as a result of program participation.

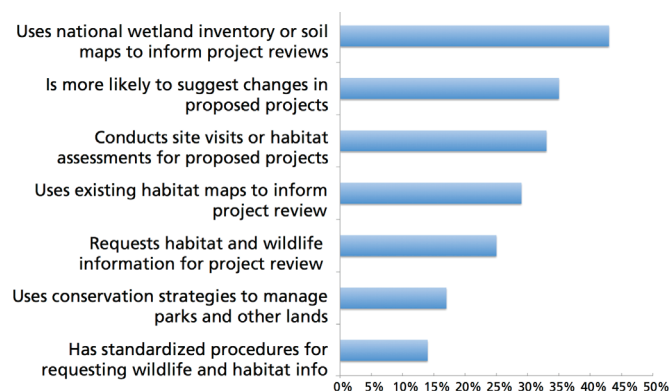
In addition, the survey found that the program achieved longer-term land use outcomes. Participants have used program assistance to inform procedures (76% of respondents; 37% of municipalities), plans (77% of respondents; 57% of municipalities), and policies (67% of respondents; 28% of municipalities). For *municipal procedures* (Figure 1), respondents were most likely to use their training to inform project reviews, especially using publicly available information such as maps and aerial photos, along with suggesting changes to proposed projects and conducting site assessments and habitat assessments. For

Research Methods

In January 2013, a team from Cornell University's Human Dimensions Research Unit conducted a web survey with 547 land use decision makers who participated in the Conservation and Land Use Program from 2001 to 2011. The survey had a 46% response rate (n=253) and respondents were from a total of 79 municipalities. The questions guiding the research included: 1) How are participants applying what they learned to land use planning, and what are the resulting conservation outcomes in terms of municipal procedures, plans, and policies? 2) What are the barriers to participants applying what they learned to land use planning?

For the study, *procedures* were defined as changes in practice that do not require approval by the municipal legislature. *Plans* create a blueprint for the future of the municipality. *Policies* refer to local laws and actions approved by the municipal legislature.

Figure 1: Percent of municipal leader respondents using Conservation and Land Use Program information, assistance, and training to inform their municipal procedures.



¹ Cornell University Human Dimensions Research Unit

² Cornell University Department of Natural Resources and Hudson River Estuary Program

ⁱⁱⁱ Beatley, T. 2000. Preserving Biodiversity. *Journal of the American Planning Association*, 66(1): 5-20.

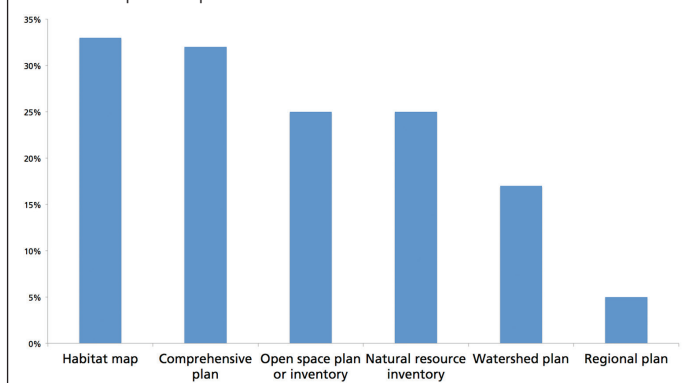
^{iv} An overview of the Conservation and Land Use Program is available in Strong, K., et al. 2015. Conservation and Land Use: Engaging Municipal Officials in Improving Natural Resource-Based Planning. CaRDI Research & Policy Brief, Issue 69.

^v Allred, S., Stedman, R., Tse, C. and M. Mullen. 2015. Building Local Capacity for Conservation and Land-Use Planning in the Hudson Valley: Evaluation of the Hudson River Estuary Program's Biodiversity Outreach Program. Human Dimensions Research Unit Publ. Series 15-8. Dept. of Nat. Resources, CALS, Cornell Univ., Ithaca, NY. 192pp.

^{vi} Funding for the Conservation and Land Use Program, the evaluation research, and this brief comes from the NYS Environmental Protection Fund as administered by the NYS Department of Environmental Conservation.

municipal plans, respondents most frequently used the program information for creating habitat maps, comprehensive plans, open space inventories, and natural resource inventories (Figure 2). For *municipal policies*, respondents utilized program information most frequently to update zoning that conserves natural areas and to pass laws to reduce development impacts on natural areas.

Figure 2: Percent of municipal leader respondents using Conservation and Land Use Program information, assistance, and training to inform their municipalities' plans and inventories.



An important question for extension educators to consider is which program offerings result in the desired land use outcomes. The survey found that customized technical assistance contributed to all three types of outcomes: procedures, plans, and policies. Financial assistance and participation in multi-day trainings were associated with the development of plans. Finally, focused, short-duration trainings were significantly associated with the adoption of policies.

Municipal Capacity and Barriers to Conserving Biodiversity

Local factors—especially leadership interests and staffing—were reported to influence whether municipalities incorporate biodiversity into land use planning. When municipal board members spend time on habitat conservation issues, it is usually because of personal interest (68% important or very important), interests of the board chair (58%), or being included as a priority in existing plans (51%). Municipalities with a planner on staff or communities that consulted with biologists or ecologists were more likely to inform municipal plans with conservation information.

The researchers also looked at housing density (rural, exurban, and suburban/urban categories) to understand capacity differences. Interestingly, housing density did not predict significant differences, suggesting that even small rural municipalities can make progress toward incorporating natural resources into land use planning.

Overall, 42% of respondents felt their municipality did not have adequate procedures, plans, and policies in place to conserve biodiversity. Half of respondents (50%) thought their municipal boards needed more assistance and greater commitment from their leadership to better incorporate biodiversity into land use and conservation planning. Nearly as many (47%) felt greater coordination between municipal boards and a stronger mandate would improve procedures, plans, or policies.

Two thirds (65%) of respondents indicated the demand for natural resource information to support planning and decision making in their municipalities had increased or greatly increased in the last five years, while 41% stated that the resources available for conservation (like budget, volunteers, or information) had decreased or greatly decreased. Respondents identified lack of funding (73%), local politics (64%), inadequate resources to implement and enforce (62%), and lack of support from local leaders (52%) as primary barriers to taking conservation actions. This funding deficit is consistent with recent research on local capacity to address open space conservation in the Hudson Valley^v.

Insights for Municipal Leaders

Municipalities are under pressure to address myriad land use planning issues, and their boards and committees want to address conservation despite the challenges. Building capacity through programming such as offered by the Conservation and Land Use Program can help mitigate the decline in funding resources and foster increased understanding and partnerships necessary for successful, locally-driven conservation planning. In addition, there are further steps that municipalities can take to support conservation-oriented land use actions.

Within municipalities, more communication between boards that address land use planning could help to ensure natural resource issues are discussed within the context of development and community needs. Given board turnover, municipalities can also promote greater peer-to-peer learning. More experienced members could serve as mentors to newly appointed members, creating continuity in knowledge, skills, and strategies. This type of peer education could also apply inter-municipally, which may support consistent policies across the watershed.

Across multiple municipalities, leaders could pool resources by sharing a natural resources planner, for example, or by leveraging additional funding to build regional capacity. Such intermunicipal collaboration is an effective strategy for addressing issues that span municipal boundaries, including landscape connectivity, watershed protection, and climate change.

Insights for Extension Educators

This study demonstrates that for extension programs to yield long-term outcomes in the land use planning arena—especially in a region as large and diverse as the Hudson River Estuary watershed—offering a variety of programs over a long period of time is beneficial. This approach considers the needs of different communities, and it can foster agility when opportunities arise. For example, following program participation, a municipal official may propose to include habitat conservation and open space protection recommendations in the town's comprehensive plan. There may be no movement on the recommendation for years, until a shifting priority opens the door for additional technical or funding assistance to advance the recommendation into an actionable policy with real conservation potential, such as a land protection fund. Providing outreach and education to municipal officials today positions them to seize the moment in the future when barriers to taking action are fewer and the timing is right.

Land use planning and policy changes happen slowly, differ by community, and are affected by many external factors. This research shows that extension programs like the Conservation and Land Use Program can be an effective partner to municipal officials to help them achieve conservation goals through local land use.

^v Larson, L.R., T.B. Lauber, and D.L. Kay. 2014. Building local capacity to respond to environmental change: lessons from New York State. CaRDI Research & Policy Brief. Issue Number 63.

